Section II: Nine Continuing Planning Process Elements

ELEMENT 1

For developing effluent limits and schedules of compliance at least as stringent as those required by Section 301(b)(1) (The process for effluent limits of point sources, other than publicly owned treatment works, including the application of best practical control technology) and (2) (effluent limits for point sources other than publicly owned treatment works, including the application of best achievable control technology), 306 (National Standards of Performance for the control of the discharge of pollutants which reflect the greatest degree of effluent reduction possible) and 307 (Toxic and Pretreatment Effluent Standards, applicable only if such standards impose more stringent requirements) and at least as stringent as any requirements contained in applicable Water Quality Standards in effect under authority of Section 303 (Water Quality Standards and Implementation Plans) of the Clean Water Act.

The process for developing effluent limitations and schedules of compliance as required by sections 301(b)(1) and (2), 306 and 307 of the Clean Water Act and as required in applicable Water Quality Standards

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Summary *– This element identifies the process for developing effluent limitations and schedules of compliance as required by the Clean Water Act (the Act) and the applicable Water Quality Standards in the program referred to as the National Pollutant Discharge Elimination System (NPDES).*

Water pollution sources are generally classified as either point source or nonpoint source. Water quality can be affected by point sources, such as municipal and industrial discharges and by nonpoint sources, such as urban runoff, agricultural practices and some construction activities. Point source discharges are generally required to operate under the NPDES permit program, while nonpoint source pollution is addressed by the state's nonpoint source planning efforts. The state's implementation authority for the federal NPDES program requires that state regulations insure that facilities use effective treatment methods to prevent water contamination. There are technology-based limits, water quality-based limits and effluent limits derived from applicable technology and Water Quality Standards (WQS), as well as best management practices for storm water discharges associated with industrial activities that must be accommodated in the NPDES program. Applicable deadlines for meeting effluent requirements are part of the state operating permit. The permitted limits for treated wastewater allow discharges to state waters or no discharge requiring land application. The residuals or sludge removed cannot be discharged but must be disposed of according to state regulations. The NPDES program regulations control the industrial, domestic and publicly operated

treatment works. The pretreatment program of the publicly operated treatment work is a cooperative effort of federal, state and local regulatory environmental agencies established to protect water quality. Various other permitting activities are described in this element.

Requirements under the Clean Water Act

The Missouri Clean Water Commission has adopted and continues to adopt effluent, pretreatment and control regulations. These regulations insure that facilities use effective treatment methods to prevent water pollution from each significant or potentially significant source. These same regulations limit or prevent the introduction of water contaminants into publicly-owned treatment works throughout the state as required under the Clean Water Act. The Commission may modify such regulations from time to time.

The National Pollutant Discharge Elimination System (NPDES) controls discharges from industrial and municipal wastewater treatment plants and storm water discharges. Missouri was granted NPDES implementation authority by the U.S. Environmental Protection Agency in 1974. State water pollution control operating permits, issued and enforced by the state of Missouri, are equivalent to NPDES Permits. State permits have requirements and limits on amounts of pollutants that discharged waters may contain. Permits are promulgated and issued by the Missouri Clean Water Commission under Chapter 644, RSMo.

Water pollution sources are generally classified as either point source or nonpoint source. Water quality can be affected by point sources, such as municipal and industrial discharges and by nonpoint sources, such as urban runoff, agricultural practices and some construction activities. Point source dischargers are generally required to operate under the NPDES permits. Nonpoint source pollution controls are part of the state's nonpoint source pollution plan. Permits issued by the Missouri Department of Natural Resources require that facilities meet specified limits on pollutants going into a Missouri waterway. The Water Protection and Soil Conservation Division regulates and issues permits for a variety of industrial, commercial and construction activities. The state has the primary authority under the NPDES for permitting, inspection and enforcement activities of regulated facilities within the state.

Water Protection

There are different approaches for determining specified effluent limits in state operating or National Pollutant Discharge Elimination System (NPDES) permits. While all permits are protective of water quality, they may vary widely in specific limits based on the nature of the discharge and of the particular stream or lake that receives the discharge. As a rule, permits reflect the more stringent of technology-based and water quality-based limitations. Additionally, discharges must not be toxic to aquatic life.

1. Technology-Based Limitations

Technology-based limitations represent the basic minimum degree of treatment that must be achieved by all dischargers on a nationwide basis, as defined in Section 301 of the Clean Water Act. State operating permits are required to contain technology-based limits established by the U.S. Environmental Protection Agency (EPA) and any more stringent limits that are necessary to ensure that discharged pollutants will not cause the receiving waters of Missouri to fail to meet Missouri's Water Quality Standards. Chapter 7 of the Clean Water Commission's rules defines

technology-based treatment requirements for various discharge situations. These technology-based limits consider the characteristics of the wastewater that is being treated. Special effluent criteria, called categorical standards, apply to certain industries. Secondary treatment requirements allow alternative limits for facilities that use trickling filters and waste stabilization ponds to meet requirements for "equivalent to secondary treatment." Applicable technology-based requirements may include national standards and requirements applicable to all facilities in specified industrial categories or facility-specific, technology-based requirements based on the permit writer's best professional judgement.

A new source is any facility that begins construction following the publication of the proposed standards. A new facility must demonstrate compliance with New Source Performance Standards within 90 days of the new facility's operation. Since 1977, best available technology requirements focused solely on toxic and nonconventional pollutants and best conventional control technology was for conventional pollutants. For best conventional control technology, the department is required under the Clean Water Act to consider the cost of attainment in effluent reduction and the benefit to be achieved based on best professional judgement.

The EPA publishes biennial plans for developing new effluent limit guidelines. In many instances effluent limit guidelines are established only for those indicator pollutants that will ensure that industrial facilities comply with the technology-based requirements of the Clean Water Act. Permit writers determine the proper category, subcategory and use of guidelines; classifying plants that fall under more than one subcategory and/or have multiple products; and determine flow rates as well as alternate limits for varying flow rates by considering the application of mass versus concentration limits.

2. Water-Quality-Based Limits

Whenever technology-based permit limits are not stringent enough to meet Missouri's Water Quality Standards, the Clean Water Act and EPA regulations require the development of more stringent, water quality-based effluent limits. The Clean Water Act requires every state to develop Water Quality Standards for all water bodies or segments of water bodies within the state. Water Quality Standards identify a designated use or uses for the water. The water quality criteria for such waters are based on the established use of the water. The federal Water Quality Standards include criteria for aquatic protection and human health protection and allow states to develop their own numeric criteria for site-specific reasons. The Act requires states to adopt criteria sufficient to protect designated uses for state waters. Criteria may be numeric, expressed as pollutant or constituent concentrations or levels, or narrative statements. Two of the main considerations in developing water-quality-based effluent limits are biodegradability of contaminants and dilution within the receiving water. Missouri is required to review its Water Quality Standards every three years under the Clean Water Act. These revisions are to help meet the goal to protect fish, shellfish, wildlife and recreation.

Missouri has adopted federal numeric and narrative criteria. Where a water body is designated for more than one use, criteria necessary to protect the most sensitive use must be applied. The EPA recommends that states use the most current risk information available in the process of updating human health criteria. The EPA periodically updates its risk assessment information. EPA ambient water quality criteria documents provide a choice of exposure risk levels within

specified ranges for carcinogenic substances ranging from 10^{-5} to 10^{-7} that states may use. The regulations in Chapter 7 require state permit writers to use 10^{-6} as the permissible level of risk to human health. This corresponds to one additional cancer case in a population of 1 million people with lifetime exposure.

Missouri currently uses both the chemical-specific approach and the whole effluent toxicity (WET) approach to implementing Water Quality Standards. In NPDES, federal criteria are used in the chemical-specific approach as the basis to analyze an effluent, to decide which chemical needs control and to derive permit limits that will control those chemicals to achieve Water Quality Standards in the receiving water. In the WET approach, the receiving water's quality is protected from the aggregate toxic effect of a mixture of pollutants in the effluent through acute toxicity tests. Biological criteria or the biological assessment approach is the third water quality-based approach to implementing standards. Department of Natural Resources' Environmental Services Program staff are developing this third water-quality-based approach. This approach is used to assess the overall biological integrity of the aquatic community. Biological criteria can be numerical values or narrative statements. Once incorporated into the Water Quality Standards, biological use designations serve as the legal basis for attaining water quality that supports aquatic life. Because the designated use (fishable, swimmable, etc.) is the legally applicable use specified in a water quality standard for a watershed, water body or segment of a water body, all pollution control activities are designed to attain the designated or existing use. An existing use is the use that has been achieved on or after Nov. 28, 1975. Use of all three approaches by the state will more fully protect water quality.

Before calculating the water-quality-based effluent limits, a permit writer must first determine the point source's waste load allocation. Water quality modeling is used to review the impact to the water body or stream from a proposed discharge. Potential water impacts are studied for critical parameter concentrations of what is being discharged and the concentration limits imposed by the Water Quality Standards for allowable pollutant loads under various flow levels. Waste load allocations establish the level of effluent quality necessary to protect water quality in the receiving water and to ensure attainment of Water Quality Standards. Point source allocations, or waste load allocations, and nonpoint load allocations are established based on the Total Maximum Daily Loads (TMDLs) within a watershed. Once waste load allocations for specific pollution sources are calculated, limits are incorporated into NPDES permits. Fact sheets including information on water quality-based limits are developed and included in the permit.

Water-quality-based limitations are those that are necessary to meet state Water Quality Standards and are generally determined through the application of a water quality model. They are developed on a case-by-case basis, depending on the location, type of discharge and receiving water characteristics. Water quality-based limits consider characteristics of the water receiving the discharge, specifically the beneficial uses and the ability of the receiving water to assimilate or absorb the contaminants. The permit writer may already have effluent data available or may require the permittee to monitor effluent. In addition, the effluent limitations for discharges to those water bodies classified as natural resource waters of high quality must comply with the anti-degradation requirements in Division 20, Chapter 7, of the Clean Water Commission's rules.

3. Effluent Regulations

Effluent standards set uniform effluent quality requirements for certain types of discharge situations. Permit writers derive appropriate effluent limitations based on applicable technology and Water Quality Standards. Division 20, Chapter 7, of the Clean Water Commission's rules sets effluent standards to be achieved by certain types of discharges and Water Quality Standards, providing guidance to permit writers in crafting limits in any particular permit. NPDES permits are required for all point source discharges and are written to meet applicable Water Quality Standards.

The effluent regulations reflect many of the water quality concerns for different classes of waters, and the standards provide information on specific waters, as well as procedures for interpreting water quality criteria. In some cases, application of technology-based controls will result in attaining water quality-based standards. If the technological controls will not meet Water Quality Standards, more stringent limits must be derived using NPDES effluent limit guidance. Waste load allocations must account for the variable quality of the effluent by including a margin of safety in the calculations. This may be accomplished by establishing the derived waste load allocation value as a daily maximum. The EPA suggests the default value to represent variability be set at – 2/3. If a calculated waste load allocation value of 30 mg/l, or average daily permit limit, derived for a pollutant over a 30-day period is the value established as a daily maximum, then 2/3 of that value (20 mg/l) would be used as the monthly average. In preparing the waste load allocations, it is not necessary that every individual point source have a portion of the total allocation of pollutant loading capacity. It is necessary to allocate the loading capacity among individual point sources as necessary to meet the water quality standard. Waste load allocation analysis establishes the effluent limits in permits issued to dischargers. Statistical variability is already built in with respect to effluent limit guidelines. NPDES regulations, policy and guidance have been issued covering various permitting activities.

Waste load allocations for whole effluent toxicity (WET) may be derived in the same general manner as individual pollutant waste-load allocations. A percent effluent concentration for conducting the WET test is established that simulates the in-stream dilution in a regulatory mixing zone.

Under Section 306 of the Clean Water Act, the National Standards of Performance for the control of the discharge of pollutants require the greatest degree of control of effluent reduction possible. Section 307, Toxic and Pretreatment Effluent Standards, are applicable only if a standard imposes more stringent requirements. Under Section 303, Water Quality Standards and Implementation Plans, effluent limits must be stringent enough to maintain Water Quality Standards.

4. Best Management Practices

Best management practices also determine effluent limits. Narrative best management practices, are designed and implemented to maintain constituent effluent limitations. They are written for various storm water discharges associated with industrial activities including storm water discharges associated with construction activity. Whenever new numerical limits are derived,

they must be technically sound and reasonable. Federal effluent limit guidelines are used when developing best management practices permit limits.

References

The development and specification of effluent limitations in state operating and construction permits must be written in a manner consistent with the provisions of Section 644, Missouri Clean Water Law and the Missouri Department of Natural Resources' rules in Division 20, Chapter 6, Permits, and Chapter 7, Water Quality Standards. State permits also are written to conform with EPA's National Pollutant Discharge Elimination System (NPDES) Program Regulations (40 CFR 122-125); EPA's Effluent Limit Guidelines (40 CFR 400-473); Sections 301(b)(1) and (2), 303, 306 and 307 of the Clean Water Act, including all applicable state and EPA policies and guidance. State operating permit requirements must also conform to the regulatory standards for water quality in neighboring states when needed even if these are more stringent than the department's. The following documents provide further information about effluent limitations.

- Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Condition in NPDES Permits (Document code 36-0400-001).
- Water Quality Toxics Management Strategy (Document code 361-0100-00).
- The Technical Support Document for Water Quality-Based Toxics Control (EPA #505-2-90-001). This document provides extensive information and guidance related to the statistical considerations when establishing effluent limits.
- The EPA Office of Water Regulations and Standards, Assessment and Watershed Protection Division, maintains the latest listing of all waste load allocation guidance documents.

Schedules for Compliance

Applicable deadlines complying with effluent limitation requirements, commonly called schedules of compliance, are dependent on the type of discharge involved.

- Existing permitted dischargers whose permits are being issued, modified or revoked are subject to more stringent technology-based limits and/or previous NPDES permit requirements. Schedules of compliance are written into major rule changes, so existing permitted dischargers can comply. Minor changes are included during the permitting process review. Schedules of compliance are proposed and revised due to permitting changes as a result of new Total Maximum Daily Loads or waste load allocations.

- Existing dischargers who have never received valid NPDES permits are treated as new dischargers. The governing effluent limitations must be achieved immediately upon issuance of the permit. A consent order and agreement is used to resolve the permittee's noncompliance status, if necessary.

- New dischargers and new sources are obligated to meet NPDES permit requirements upon issuance of the permit. The discharger must achieve the governing effluent limitations upon commencement of discharge. Operating permits are initially issued, along with construction permits, to assure future compliance with effluent limits.

- Technology-based requirements are effective upon permit issuance unless EPA guidelines provide for a later compliance deadline.

- Water quality-based effluent limitations, continued from the existing NPDES permit, are effective upon the date of permit issuance or modification. A consent order and agreement is developed to resolve any of the permittee's noncompliance status.

- New water quality-based effluent limitations and any carry-over parameters with more stringent water quality-based effluent limitations than previously permitted are effective upon the date of permit issuance. If the permittee cannot meet these effluent limitations on the effective date, a consent order and agreement must be developed to resolve the permittee's noncompliance status.

- Schedules of compliance are written into existing permits to bring facilities into compliance. These permits contain interim effluent limitations that the permittee must comply with.

References

- Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits, (EPA #362-0400-001)
- Water Quality Toxic's Management (EPA #361-0100-003)

Water Pollution Control Program Permit Descriptions and Applicable Fees

The mission of the Water Pollution Control Program is to protect Missouri's water quality in its rivers, lakes and streams. The program's permitting process assures the protection of one of nature's most vital resources.

The Missouri Clean Water Commission issues permits under state and federal laws limiting the discharge of pollutants in the state's waters. The Water Quality Standards and effluent regulations are used to establish the conditions and limitations contained in permits. The permits are usually written in the regional office and reviewed by the Water Pollution Control Program to assure permitted discharges do not cause violations of standards. General permits, permit renewals and permits for facility plans are reviewed by the program's planning section for consistency with water basin plans, water quality management plans and Total Maximum Daily Load plans. There are approximately 10,287 active operating permits in Missouri. The department's Geological Survey and Resource Assessment Division assists the program by reviewing the geologic setting of planned facilities to assure groundwater protection. The regional offices are responsible for inspecting the permitted facilities. These inspections are intended to ensure that permit holders both understand and comply with the permits. The Water Pollution Control Program also takes enforcement action against those who violate the Missouri Clean Water Law implementing regulations.

Site-Specific Permits

Many permits are written to be site-specific permits due to the nature of the wastewater stream and the receiving stream. These permits usually have a five-year cycle. The issuance of permits to build, erect, alter, replace, operate, use or to operate and maintain an existing point source of water pollution from domestic and industrial facilities are written as site-specific permits. Many of the permits are for the discharge of treated wastewater from domestic and industrial facilities. On the other hand, permits for land disturbance or storm water are often general permits that are issued with standard conditions that are required at each site. Many of the department's permits are issued for land application for wastes from domestic, industrial and agricultural facilities with certain requirements for regular sampling of wastewater during land application. Land application permits specify the methods by which wastes are handled and disposed. Permits also specifically limit the amount and concentration of pollutants discharged. Fees for site-specific permits do very. See Permitted Fees below.

General Permits

General Permits are available for many wastewater operating permits, concentrated animal feeding operation permit and storm water permit requirements. General permits are issued for a five-year period and must have an application fee of $150. General permits are written to cover a category of discharges described in the permit. The area covered by the general permit may correspond to an existing geographic or political boundary. The category of point sources may include similar types of operation, discharge the same type of wastes, require the same effluent limits or operating conditions, require similar monitoring and are more appropriately controlled under a general permit.

General permits may be issued to multiple locations where activities are similar. All facilities receiving a general permit must adhere to the conditions contained in the general permit until the date of expiration or until the facility obtains a site-specific permit. Missouri currently offers 45 different general permits. Examples of facilities that may be issued general permits are airports, chemical manufacturing plants, fabricated structured metal plants, foundries, limestone and rock quarries, lubricant manufacturing, petroleum storage greater than 50,000 gallons, and wood treaters.

A system of permit fees is contained in Section 644.052, RSMo and follows below.

Permitted Fees

Fees effective Aug. 28, 2000, and expire Dec. 31, 2007

OPERATING PERMITS - section 644.052, RSMo.

NON MUNICIPAL DOMESTIC DISCHARGES - ANNUAL FEES

Design Flow (in gallons per day)	**Cost**
Under 5,000	$100
5,000-5,999	$150
6,000-6,999	$175
7,000-7,999	$200
8,000-8,999	$225
9,000-9,999	$250

Design Flow	
10,000-10,999	$375
11,000-11,999	$400
12,000-12,999	$450
13,000-13,999	$500
14,000-14,999	$550
15,000-15,999	$600
16,000-16,999	$650
17,000-19,999	$800
20,000-22,999	$1,000
23,000-24,999	$2,000
25,000-29,999	$2,500
30,000- up to1mgd (1 million gals. per day)	$3,000
1 mgd or more	$3,500

POTW user fees (municipal connection Fees) - Wastewater systems for each residential and industrial/commercial customer of public sewer systems	*$.40 - $.80 (residential) $3.00 - $25.00 (commercial) per connection(s)& up to $700.00 for multiple connections*

INDUSTRIAL DISCHARGES - ANNUAL FEES

Class 1A CAFO
$5000

EPA Categorical Industry (Unless they discharge only storm water, they pay under industrial storm water.)*

Design Flow	**Cost**	**EPA** has developed technology-based effluent guidelines
Under 1 mgd	$3,500	
1 mgd or more	$5,000	

Industrial Storm water

Design Flow / Site-Specific	**Cost**
Under 1 mgd	$1,350
1 mgd or more	$2,350

All Other Industrial Discharges

Design Flow	Cost	No technology-based effluent guidelines developed
Under 1 mgd	$1,500	
1 mgd or more	$2,500	

* See reference: Federal Code of Regulations, 40 CFR, Part 405-499 for list of industries covered.

General Permits – Annual Permit Fees

Fees effective Aug. 28, 2000, and expire Dec. 31, 2007
$50 for chemical fertilizer or pesticide facility

$60 for existing permits containing process water or storm water
$150 for new permits containing process water or storm water

GENERAL PERMITS – PERMIT FEES EVERY FIVE YEARS
$300 for land disturbance permits
$150 for CAFOs

CONSTRUCTION PERMITS - section 644.053, RSMo
$750 for a wastewater treatment plant for a design flow *under* 500,000 gpd
$2,200 for a wastewater treatment plant for a design flow *over* 500,000 gpd
$75 for sewer extension under 1,000 feet long
$300 for a sewer extension over 1,000 feet long or the construction of a lift station

Permittees proposing to build under more than one construction unit are only required to pay the highest fee.

Permit Modifications (site specific only)
$200 for municipals
All others pay 25 percent of their annual fee

Variances: $250

Permit-by-Rule: $25.00 (Regulations have not yet been adopted to implement Permit-by-Rule)

401 Certifications $75.00

Permits from the Water Pollution Control Program Usually Involve the Following Activities:

- construction of sanitary sewer lines to connect a project to an existing community sewer system;
- construction of a wastewater treatment system;
- wastewater or cooling water to be discharged from the project site into a drainage or body of water;
- wastewater or sludge to be disposed of on site;
- residential discharges of wastewater, to serve more than one family unit;
- more than five acres of excavation or earth moving;
- concentrated animal feeding operations (CAFOs);
- installation of a groundwater heat pump injection/withdrawal system serving more than eight households; or
- storm water discharges from certain types of industrial activity based on standard industrial classification codes.

Wastewater Treatment Permit Process Controls: General Explanation

The Missouri Clean Water Act requires that discharges from industrial wastewater treatment facilities, publicly owned treatment works (POTWs) or any other wastewater treatment facility into surface waters of the state be treated. Waters of the state are defined as all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state. These include the Missouri and Mississippi rivers and losing streams, or streams that distribute 30 percent or more of its flow through natural processes. Waters of the state also include metropolitan no-discharge streams, special streams, subsurface waters in aquifers and all other waters.

The system components of the Water Quality Management permitting process include effluent discharge controls, sludge management controls and pretreatment controls. Described below are the three primary wastewater treatment systems for raw wastewater (process wastewater effluent) and the use of disposal methods for sludge or biosolids, a byproduct of the wastewater treatment process. Municipal wastewater treatment systems are POTWs systems. Industrial wastewater treatment systems and domestic wastewater treatment systems are either part of the POTWs system or operate apart from the POTWs system. The following descriptions show the general legal complexity under which each type of system operates.

- Industrial Wastewater Treatment Systems not connected to the POTWs systems
- Domestic Wastewater Treatment Systems not connected to the POTWs systems
- Publicly Owned Treatment Works or POTWs and the Pre-Treatment Component

Industrial Wastewater Treatment Systems Not Connected to the POTWs

Industrial wastewater treatment facilities other than POTWs must meet the state and federal rules for effluent requirements for discharging to the state's receiving waters and the state rules for irrigation to agricultural land. These facilities must also meet state storm water control rules for storm water run-off from irrigation of effluent. State effluent limits require the use of the applicable pollutant-control technology currently effective under EPA guidelines. If EPA standards are not available or applicable, the rule requires the department to set specific parameter limits in proposed operating permits using best professional judgement. The best professional judgement process establishes limits that will comply with Water Quality Standards for surface and subsurface waters.

Industrial wastewater treatment system facilities are required to meet the state's water pollution control rules for industrial sludge, state solid waste rules for landfill disposal, air pollution control rules for incineration and the state water pollution control rules for land application to agricultural land. State storm water control rules apply to storm water run-off from land application. (See Element 7)

Domestic Wastewater Treatment Systems not on the POTWs

These domestic systems must meet federal and state effluent requirements for discharging to the state's receiving waters and state rules for irrigation to agricultural land as well as state storm

water rules for storm water run-off from irrigation to agricultural land. Effluent limitations require the use of the applicable pollutant-control technology currently effective under EPA guidelines. If EPA standards are not available or applicable the rule requires the department to set specific parameter limits in proposed operating permits using best professional judgement. The best professional judgement process established limits that will comply with Water Quality Standards for surface and subsurface waters.

Domestic wastewater treatment-systems facilities are required to meet the federal rules and state rules for domestic sludge permits. State solid waste rules for landfill disposal, air pollution control rules for incineration and federal and state water pollution control rules for land application to cropland apply here. State storm water control rules apply to storm water run-off from land application of domestic sludge. (See Element 7)

POTW Systems and the Pretreatment Component

The POTW Treatment System receives domestic sewage from residential and commercial sources as well as effluent from industry. POTWs discharging effluent to receiving waters of the state are controlled by federal and state rules and state water pollution control rules for irrigation to crop lands. State storm water rules for storm water run-off from irrigation to agricultural land apply here.

Domestic sludge from the POTW falls under state rules and the technical guidelines of the federal part 503 rule. Solid waste rules control the disposal of domestic sludge and federal and state air pollution rules control incineration. Federal and state rules control land application to crop land. State storm water control rules apply for storm water run-off from land application. (See Element 7)

Industrial sludge, the byproduct of industrial pretreatment, within the POTW system is controlled by state rules. Solid waste rules control the disposal of industrial sludge and federal and state air pollution rules control incineration. Water rules control land application to agricultural land. State storm water rules covering storm water run-off from land application apply. If EPA standards are not available or applicable, the rules require the department to set specific parameter limits in proposed operating permits using best professional judgement. The best professional judgement process established limits that will comply with the Water Quality Standards for surface and subsurface waters. (See Element 7)

Missouri Department of Resources, Division 20, Clean Water Commission, Chapter 6, Permits; Chapter 7, Water Quality; and Chapter 8, Design Guides.

Wastewater Use for Land Application

Domestic and Industrial Wastewater Irrigation

All wastewater irrigation systems with domestic flows exceeding 3,000 gallons per day and all industrial flows must be permitted under the state's laws and regulations. Permitting requirements include limitations and monitoring requirements, operation records and reporting requirements, best management practices and other special conditions. Storm water monitoring and groundwater monitoring may also be required where deemed appropriate. Monitoring

reports must be submitted monthly, quarterly or annually depending on the size, complexity and location of the irrigation systems.

Domestic wastewater is sewage originating from human sanitary conveniences and includes both publicly owned treatment works (POTW) and private domestic wastewater from residential and commercial sources. Industrial wastewater is controlled for many additional pollutants.

POTW domestic wastewater treatment facilities are required to meet secondary treatment limits prior to discharge into state waters. Wastewater irrigation is one of the preferred options. Many domestic wastewater irrigation systems are currently operating in the state.

The most common land application system in Missouri is the "no discharge" system, which provides complete storage of wastes for winter and inclement weather conditions and land applies the wastewater and sludge during the growing season.

Applicants for permits are required to submit an engineering report that evaluates the environmental and economic feasibility of no-discharge options. The final decision of no-discharge versus discharge is left up to the permittee except for facilities located in certain sensitive watersheds, which are identified in the effluent regulations. If a facility is located within two miles of a losing stream or other specially categorized stream, no-discharge is mandatory and new discharges are not allowed except where there are no other feasible options based on the criteria outlined in the effluent regulations.

Treatment System: Design and Construction Requirements

Missouri treatment systems are required to adhere to the Design Guides in Chapter 8 of the department's rules. Land application requirements are contained in the department's rules, Design of Small Sewage Works, 10 CSR 20-8.020 and Land Treatment, 10 CSR 20-8.220. Treatment prior to land application of wastewater is outlined in these design guides and provides treatment equivalent to that obtained from a primary wastewater pond designed according to specifications. Land treatment is the application of wastewater at rates not to exceed the maximum that can be absorbed by the soil and vegetation without detrimental effects to surface water, groundwater, soils or crops. An operation and maintenance plan is required to explain key operating procedures. Modifications or expansions to existing operations must be updated for the necessary approvals to an existing permit.

Operating permits include limitations and monitoring requirements, operation and reporting requirements, best management practices and other special conditions. Storm water monitoring and groundwater reports are submitted annually, quarterly or monthly depending on the size, complexity and location of the irrigation system. Primary emphasis is to verify that the irrigation system is being maintained according to the approved plan and that water quality protection is maintained.

Permit Application, "Form I," for wastewater irrigation was first developed in 1998 to specifically address land application facilities. This application form supplements existing permit application forms. The form contains a detailed list of supporting documentation needed to address the regulatory requirements to characterize wastes and soils and also includes

reference to other pertinent technical publications on toxicity and land application design parameters that must be addressed.

Land Application Unit

The Land Application Unit of the Water Pollution Control Program provides technical support and oversight for program and regional activities related to land application and disposal of wastewater and residuals from municipal, domestic, industrial and agricultural sources. The unit provides situational analysis and updates on technical standards. In addition, the unit reviews water quality monitoring data, nutrient management plans, land application reports, permit processing, inspection guidance, complex facility inspections and enforcement actions. The chart below provides a summary of oversight responsibilities by facility type.

Land Application Facilities			
Facility type	**Number of facilities**	**Manure gallons/year (billions)**	**Human population equivalent* (millions)**
Municipal and domestic sludge	2,000	6.0	3.5
Concentrated Animal Feeding Operations (permits)	376	2.1	8.3
Animal Feeding Operations (letter of approval)	2,592	1.2	5.9
Industrial wastewater and sludge	100	0.2	0.5
TOTAL	**5,068**	**9.5**	**18.2**
* *Population of humans required to excrete an equivalent pounds per day of pollutants.*			

References

- Missouri Clean Water Law, Chapter 644, RSMo, Missouri Department of Natural Resource's rules in the Code of State Regulations, or CSR Title 10, Division 20, Chapter 6, Permits, Chapter 7, Water Quality and Chapter 8, Design Guides, as follows; 2.010, Definitions, 6.010, Construction and Operating Permits, 6.011, Permit Fees, 6.015, No-Discharge Permits, 6.020, Public Participation, Hearings and Notice to Governmental Agencies, 6.200, Storm Water Regulation, 6.300, CAFO, 7.015, Effluent Regulations, 7.031, Water Quality Standards, 8.020, Design of Small Sewage Works, 8.110, Engineering Reports, Plans and Specifications, 8.220, Land Treatment, 8.500.
- Secondary Containment for Agrichemical Facilities, *Agricultural Waste Management Field Handbook*, National Engineering Handbook, Part 651, USDA.
- Natural Resources Conservation (NRCS), *Soil Test Interpretations and Recommendations Handbook*, University of Missouri, Department of Agronomy, December 1992.
- *Land Treatment of Municipal Wastewater*, U.S. EPA Document #625/1-81-013, Oct. 1991;
- *Land Treatment of Municipal Wastewater – Supplement on Rapid Infiltration and Overland Flow*, EPA Document # 625/1-81-013a, Oct.1994.

- *Design of Land Treatment Systems for Industrial Wastes*, (Not on POTW), Michael Ray Overcash, North Carolina State, 1979.
- *Industrial Wastewater/Sludge Land Application Training Workshop, Conference Proceedings*, University of Missouri Extension, May, 1997.
- *Operation and Maintenance Consideration for Land Treatment Systems*, EPA #600/2-82-039, Jan. 1982.
- *Monitoring Guidance for Determining the Effectiveness of Nonpoint Source Controls*, EPA #841-B-96-004, September 1997.
- *Climatic Atlas for Design of Land Application Systems*, WP-1400, published by Division of Environmental Quality, October 1984, Missouri Department of Natural Resources.

Pretreatment Component Management: Effluent and Sludge Control

Since, the mid-1980s, Missouri requires cities to have a state-approved pretreatment program when certain industries are connected to municipal sewers. This pretreatment program is intended to require industries to meet numeric limits on the concentrations of toxins that they discharge into city sewers. Limits protect the stream receiving the treated wastewater discharge and reduce the quantity of pollutants in the municipal sludge.

The pretreatment component of the permitting protection process in the Water Pollution Control Program is part of the National Pretreatment Program. The government's National Pretreatment Program delegates approval authority to state governments to protect Publicly Owned Treatment Works (POTWs) and the environment from adverse impacts that may occur when pollutants are discharged into a municipal sewage system. The program is a cooperative effort of the federal, state and local regulatory environmental agencies established to protect water quality. The program is designed to reduce the level of pollutants discharged by industry and other non-domestic wastewater sources into municipal sewer systems. Industrial processes may produce wastewater consisting of pollutants similar to those in municipal sewage but often more concentrated. Industrial pollutants may include a variety of metals and synthetic compounds in sufficient amounts to present serious hazards to human health and aquatic life. The National Pretreatment Program consists of about 1,500 local programs designed to meet federal requirements and to accommodate unique local concerns.

Through an agreement with the U.S. Environmental Protection Agency (EPA) in the early 1980s, the Missouri Department of Natural Resources became the legal approval entity for delegating control authority to metropolitan and local areas. The department has the requisite legal authority to impose pretreatment requirements on industrial facilities needing permits to discharge into POTWs. The department must exercise this authority in a non-arbitrary manner. Missouri state law authorizes control authorities to issue and enforce pretreatment permits.

The legal authority of a POTW or other local control authority to administer a permit program is derived from state law and local ordinance. The control authority collects data on industrial user discharge, determines which industries need regulation and passes ordinances. Local authorities incorporate National Pollution Discharge Elimination System (NPDES) limits within their permitting process. These same authorities are responsible for the staffing and funding of their pre-treatment programs.

General pretreatment regulations require all POTWs with design flows greater than 5 million gallons per day and receiving industrial discharges that pass through or interfere with the operation of the POTW to develop and implement an approved pretreatment program. At the discretion of the department, smaller POTWs can also be required to develop programs.

A permit program is a mechanism for controlling the discharge of industrial users in terms of specific discharge limitations, monitoring frequency and locations. Local control authorities are the regulating authority for all industrial users contributing wastewater to POTW's. An industrial permit describes, at a minimum, the discharge standards and applicable categorical standards, local limits and monitoring requirements.

Permits contain actual numeric limits in terms of concentration and/or mass of pollutants discharged. Permit conditions should reflect the most stringent applicable federal, state and local pretreatment requirements.

Control authorities may hold public hearings to receive public comment on draft permits. Public involvement during permit development, particularly discussions with the applicant, allows the permit writer to identify and resolve issues before the permit is finalized. Local permits are put on public notice and comments are accepted. POTWs satisfy control requirements and notify industrial users of applicable pretreatment standards by issuing the permit.

EPA guidelines for specific minimum federal requirements for industry provide a starting point for the local permitting control authority. Local control authorities have the option of writing additional limits as necessary into the permit of the industrial user. Industrial users provide information in their permit applications for their processes, raw materials and flows of pollutant. The public has access to the information submitted by the industrial users for the permit to be issued. Provisions are made, however, to protect the confidentiality of business proprietary information excluding the effluent data. Cities may monitor the industrial user or allow the user to do the required self-monitoring to ensure continued compliance.

Permits allow the POTW to measure the performance of the user against the permit limits and conditions to determine noncompliance with permit conditions. Calculations of discharge limits are based on stringent regulatory provisions. An industrial permit will contain the effluent limits, monitoring requirements and reporting requirements as well as special conditions and general conditions. Special conditions can include additional monitoring requirements, reasons to reopen (re-opener clause) and the compliance schedule. Compliance with the permit's limits does not relieve permittees of their obligation to comply with any or all applicable pretreatment regulations, standards or other requirements under local, state and federal laws, including any regulations, standards, requirements or laws that may become effective during the term of the permit.

Although there are currently over 40 locally delegated pretreatment programs in the state, approximately 35 industrial facilities in Missouri are located in cities that do not have approved pretreatment programs.

State Pretreatment Responsibilities

Through a formal agreement with EPA Region 7, the state administers the National Pretreatment Program in Missouri. The duties associated with program administration include the following:

- Annual on-site reviews of local POTW programs, which may consist of Pretreatment Compliance Inspections or Pretreatment Audits;
- Reviewing annual pretreatment reports submitted by local POTW programs;
- Reviewing and approving new local POTW programs and modifications to existing programs;
- Acting as control authority for categorical industrial users discharging to POTWs without a local pretreatment program;
- Reviewing all new or modified NPDES permits issued to POTWs to ensure that the appropriate pretreatment requirements are included;
- Maintaining a list of pretreatment cities; and
- Providing technical assistance and general information to POTWs, industries, consultants and the general public.

References

- General Pretreatment Regulations, Categorical Pretreatment Standards and Prohibited Discharge Standards, EPA regulations, 40 CFR 403 and NPDES Part 402.
- Missouri Clean Water Law, Chapter 644, RSMo, Missouri Department of Natural Resource's rules in CSR Title 10, Division 20, Chapter 6, Permits, 6.100, General Pretreatment Regulations.
- *Industrial User Inspection and Sampling Manual for POTWS*, April 1994, EPA #831/B-94-001.
- *Pretreatment Compliance Inspection and Audit Manual for Approval Authorities*, July 1986, EPA #33/B-86-100.
- Supplemental Manual in the Development and Implementation of Local Discharge Limitations under the Pretreatment Program: *Residential and Commercial Toxic Pollutant Loadings and POTW Removal Efficiency Estimation*, May 1991, EPA #21W-4002 etc.

General Permitting for Concentrated Animal Feeding Operations (CAFOs)

Current state and federal rules require a permit for concentrated animal feeding operations (CAFOs). A CAFO is defined as an animal feeding operation where vegetation is not sustained within the confinement area and there are either:

(a) More than 1,000 animal units on contiguous property (2,500 swine, 1,000 beef, 700 dairy, 30,000 laying hens, 55,000 turkeys or 100,000 broiler chickens); or

(b) 300 – 999 animal units and there is a discharge through a manmade conveyance (pipe, ditch, channel, vehicle), and the discharge is not the result of a catastrophic storm exceeding the 25-year, 24-hour storm event. (See Appendix A)

There are two types of permits available, individual (site-specific) permits and general permits. An individual permit is tailored to the site-specific characteristics of each operating site location. The general permit is a relatively new approach intended to streamline the permit process for categories of sources that have similar characteristics and pose little risk to the environment.

Regulations allow the use of a general permit if all the sources have substantially similar types of operations, discharge the same types of wastes, require the same effluent limitations, require similar monitoring or in the director's opinion fall within a general permit category. The program director may also require any person authorized by a general permit to apply for and obtain an individual operating permit.

A statewide general permit was issued in 1996 for the CAFO point source category excluding the Class IA (7,000 plus animal units) wet handling sub-category. This general permit was developed primarily to provide a reduced fee to this industry. The individual permit is $3,500 to $5,000 per year; whereas the general permit fee is $150 per permit for a five-year permit period. Once the current general permit expired in February 2001, the existing permit holders then applied for renewal of their permits on or before Sept. 18, 2000. There are currently about 350 general permit holders. The number required could increase to about 2,000 general permits under the proposed U.S. Environmental Protection Agency (EPA) rule changes to include smaller-sized animal operations. The EPA rule was proposed formally in December 2000, and finalized by December 2002.

The general permit renewal was to be put on public notice September 2000 in order to provide time for the required 90-day public notice period and resolution of public comments prior to the February expiration of the current permit. To meet this time line, the department will be making only minor changes in the existing statewide general permit to improve readability and include updated information. A re-opener clause will be added to allow re-notice of the permit to address new rule requirements as appropriate. Revised manure-testing and soil-testing requirements will be included. Several new issues are under consideration, but final decisions will not be available in time to include in this renewal period.

The Missouri Clean Water Commission has discussed a rule revision to require Class IB (3,000 to 6,999 animal units) operations to meet the same rule requirements as Class IA operations. Under this approach, Class IB operations using liquid flushing systems would be required to have electronic or mechanical shut-off devices in the flush system pipelines in case of pump failure or pipe blockage, and operations must install secondary containment structures to contain spills from the manure collection and flushing system. In addition, the operation must employ one or more persons to visually inspect the animal waste wet-handling system and manure-holding basins at least once every 12 hours to check for structural integrity and spills. The operation must maintain records and submit reports to the department on approved report forms. New or expanded Class IB operations would be prohibited from the watersheds of the Current, Jacks Fork, and Eleven Point rivers. Only Class IA operations located in "Critical Watersheds" must submit spill prevention plans with their permit applications at this time. Critical watersheds are defined in current rules as watersheds of public drinking water lakes, within 5 miles upstream of public drinking water intake structures on streams other than the Missouri and Mississippi rivers. In addition, these include specific portions of watersheds above the federal Wild and Scenic Rivers segments of the Current, Eleven Point and Jacks Fork. The rule revision would also require an individual (site-specific) permit for all Class IB wet-handling systems, thus eliminating the general permit option for these operations.

The commission also recommended rulemaking to require permits for contract haulers or brokers that purchase or receive manure from CAFOs. The haulers become responsible for the manure and are not subject to the CAFO regulations. This is a widespread practice by the poultry industry in southwest Missouri and is available to any CAFO that does not want to be responsible for land application permitting requirements. Both these issues will require rulemaking and are currently under management review. Class IBs and other CAFOs can already be required to obtain individual permits where determined appropriate by the department.

The EPA has suggested that all new state permits include a requirement to develop a Comprehensive Nutrient Management Plan to include manure collection, storage, land application and nutrient management plans in accordance with new USDA nutrient standards. The management plan must be prepared by a "certified nutrient management specialist" under a new certification program that is yet to be developed. The current state rules already require certification by either the National Resource Conservation Service or a registered professional engineer and address the proposed plan's elements except for phosphorus. The EPA is currently developing national water quality criteria for determining allowable nitrogen and phosphorus levels in streams. States will be given up to three years after the EPA rule is finalized to promulgate new state rules to include nutrient limits for each water body. A re-opener clause in the permit will allow revising the permits as appropriate when the final rules are promulgated.

Please see the Appendix A for Missouri CAFO map.

References

- 40 CFR (Code of Federal Regulations) Part 122, NPDES, Part 123, State Requirements and Part 412, Feedlots Point Source Category.
- Missouri Clean Water Law, Chapter 644, RSMo, Missouri Department of Natural Resource's rules in CSR Title 10, Division 20, Chapter 6; Permits, Construction and Operating Permits, 6.010, Public Participation, Hearings and Notice to Governmental Agencies, 6.020, No-Discharge Permits, 6.015, Concentrated Animal Feeding Operations, 6.300, Effluent Regulations, 7.015, Water Quality Standards, 7.031.
- *Guide Manual On NPDES Regulations For Concentrated Animal Feeding Operations*, Dec. 1995, EPA #833-b-95-001.
- *Guidance Manual and Example NPDES Permit for Concentrated Animal Feeding Operations*, EPA #833/D-99-001 (Draft Aug. 1999).
- *Agricultural Waste Management Field Handbook*, Part 651, USDA, Natural Resources Conservation Service (NRCS), April 1992 and *Supplements*, *Soil Test Interpretations and Recommendations Handbook*, University of Missouri, Department of Agronomy, December, 1992.
- *Impacts of Animal Manure Management on Ground and Surface Water Quality*, A. Sharpley, et al, USDA-ARS-SPA, *National Agricultural Water Quality Lab*, published in *Effective Management of Animal Waste as a Soil Resource*, edited by J. Hatfield, CRC Press, Inc., 1996.
- *Unified Animal Feeding Strategy*, EPA/USDA, EPA #833/R-99-900, March 1999.
- *Animal Agricultural and the Environment, North American Conference*, Rochester New York, *Northeast Regional Agricultural Engineering Service*, NRAES-96, December 1996.

- *Comprehensive Nutrient Management Plan*, USDA, EPA # draft published.

Sources of information

- Guide to Animal Feeding Operations – This fact sheet details permit requirements based on the number of animal units at a particular animal feeding operating location as well as sources of information for other questions. To request the guide, write to the Missouri Department of Natural Resources, Water Protection and Soil Conservation Division, Water Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or call (573) 751-1300 or 1-800-361-4827.

- Engineering and design questions or permit questions can be answered by writing Missouri Department of Natural Resources, Water Protection and Soil Conservation Division, Water Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or call (573) 751-1300 or 1-800-361-4827 or consult the Web site, http://www.dnr.state.mo.us/deq/wpcp/homewpcp.htm.

- General Questions can be answered by the Missouri Department of Natural Resources, Environmental Assistance Office, P.O. Box 176, Jefferson City, MO 65102, or call (573) 526-6627 or 1-800-361-4827, or consult the Web site at http://www.dnr.state.mo.us/deq/tap/hometap.htm.

- Questions involving odor regulations can be answered by the Missouri Department of Natural Resources, Air and Land Protection Division, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or call (573) 751-4817 or 1-800-361-4827, or consult the Web site at http://www.dnr.state.mo.us/deq/apcp/homeapcp.htm.

Operator Certifications/Technical Assistance Program

- Information and Need-To-Know (requisite knowledge, skills and abilities) for Concentrated Animal Feeding Operators (CAFO), Operators and Supervisors and Need-To-Know for Municipal Wastewater Treatment Operators (tests) are available. Contact the Technical Assistance Program at 1-800-361-4827 or (573) 526-6627, and ask for the Operator Certification Unit.

- Sources of information are as follows: Concentrated Animal Feeding Operations, CAFOs, Missouri Regulations, Division 20, Chapter 14, 10 CSR – 20-14.010, Classification, .020, Operator Certification, .030 and Training Requirements. Also, Missouri Regulations, Division 20, Chapter 9, Municipal Wastewater Treatment Operators, 10 CSR –20-9.020,Classification, .030, Operator Certification, and .040, Training Requirements.

- For the Industrial User Permit Internet Address: http://www.epa.gov/owm/sectpre.htm, EPA #833/R-89-00.

Underground Injection Control: Groundwater Management

The state of Missouri has authority under the Federal Underground Injection Control Program to administer its Underground Injection Control (UIC) program. Missouri receives funding for its UIC program from the U.S. Environmental Protection Agency (EPA).

Injection wells are divided into five classes based on where the injected fluids go in relation to underground sources of drinking water and whether or not the injected fluids are hazardous. Of the five classes of underground injection wells the program writes permits for the Class V wells not otherwise classified. These Class V injection wells are generally used to inject nonhazardous fluid into or above underground sources of drinking water.

Aquifer Recharge Wells

Aquifer recharge wells recharge depleted aquifers. In Missouri, they are also utilized to maintain hydrostatic pressure around an underground propane storage cavern. The Water Pollution Control Program issues permits for recharge wells under the Clean Water Law, Chapter 644, RSMo . Direct review is conducted by the program's permit section.

Aquifer Remediation Wells

These injection wells are used in the cleanup of contaminated sites and are permitted by the Water Pollution Control Program under the Clean Water Law. General permits are issued for fuel spill cleanup projects that do not directly affect the groundwater. UIC permit applications are reviewed in greater detail to ensure maximum protection of groundwater resources. Requirements for other types of cleanup operations also include obtaining a general or UIC permit. Specific requirements can be obtained by contacting the Water Pollution Control Program directly.

Septic Systems/Drain-field Disposal

Septic systems with the capability to handle waste for 20 people or more per day fall under the Underground Injection Control Program. Although statewide permitting of these systems is not mandatory at this time, a number of counties do have county ordinances in place requiring permitting. Septic systems of less than 3,000 gallons per day are currently regulated through the state and county health departments.

Groundwater Heat Pump Operating Permit

Drillers of both open loop and closed loop systems are required to be licensed by both the Water Protection and Soil Conservation Division and Geological Survey and Resource Assessment Division as Heat Pump Well Drillers. Drillers applying are issued certifications for wells. Both open and closed loop bore-holes are permitted. Open Looped Systems are exempt if the heat pump serves fewer than eight houses and if the heat injection or withdrawal rate is 600,000 BTU/hour or less. Water Pollution Control Program regulations apply when the heat pump is for a commercial establishment, such as a factory or nonhousehold situation and it injects or withdraws more than 600,000 BTU/hour. The applicant must submit a letter addressing the 10 questions in department rules for groundwater heat pump operating permits and submit a map. An operating permit is issued limiting the discharge of heat from the injection/withdrawal of

water to/from the well. The Water Protection and Soil Conservation Division addresses the construction activities that make a Water Pollution Control Program construction permit unnecessary.

Underground Injection Control (UIC) Permits

If an applicant applies for a UIC permit to clean up a contaminated aquifer, there must be two different permits issued by the Water Pollution Control Program: 1) a construction permit for the treatment system, and 2) an operation permit. Public Safety Offense, Section 577.155, RSMO bans the use of these wells as disposal systems. Any detectable trace of the fluids used for remediation must be eliminated after remediation is completed by using withdrawal wells or reversing the injection process.

An operating permit is required for the injection of any fluid other than ambient, or surrounding, air. The effluent limits in the UIC operating permit control what is injected and permit whatever is discharged to the receiving waters in the state during the final stage of the remediation project. UIC permits along with UIC forms I and II must be completed along with a map, a lithologic log, a project description and a check for the fees.

Requirements for the UIC Permit Evaluation include a summary of minimum data for a permit to conduct in situ work that involves underground injection. The information submitted determines whether the proposed procedure will be allowed under a general permit or if a site-specific UIC permit, available from the Water Pollution Control Program, will be required. The department's Geological Survey and Resource Assessment Division issues the letter of approval or disapproval for the design and construction standards of a particular well.

Source Water Protection

The Safe Drinking Water Act amendments, 1996, encourage source water assessment and protection for all states. Missouri Clean Water Law, Chapter 644, RSMo mandates source water protection. The source water protection activities as a result of the Safe Drinking Water Act amendments expand the concepts of public water supply source protection to the watershed setting for surface water. This program coincides with the pre-existing Wellhead Protection Program. The Well Head Protection Section of the Geological Survey and Resource Assessment Division is located in Rolla.

References

- 40 CFR Part 142, Primary Drinking Water Regulations, Part 143, Secondary Drinking Water Regs, Part 144, Underground Injection Control Program, Part 145, State UIC Program Requirements: Part 146, Underground Injection Control Program, Criteria and Standards.
- UIC law and regulations include Missouri Clean Water Law, Chapter 644 RSMo; Nuisance Law Banning Injection, Section 577.155 RSMo, Well Driller's Law Section 256.600 RSMo, State Standards for On-Site Disposal .Section 701 RSMo, Oil and Gas Law .259 RSMo; Groundwater Heat Pump Operating Permits 10 CSR 20-6.070, Class III Mineral Resources Injection / Production Well Operating Permits 10 CSR 20-6.090, Missouri Well Construction Standards, 10 CSR 23-4.060 and Section 577.155 RSMo, Prohibits Injections -with certain exceptions.

Sources of information

- Missouri Department of Natural Resources, Water Protection and Soil Conservation Division, Water Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or call (573) 751-1300 or 1-800-361-4827.
- Missouri Department of Natural Resources, Geological Survey and Resource Assessment Divsion, P.O. Box 176, Jefferson City MO 65102 or call (573) 368-2100.
- Additional information for injection wells in Missouri is available by writing UIC/Oil and Gas Unit, P.O. Box 250 Rolla, MO 65401, or by calling (314) 368-2168.

Storm Water Management

Since the 1970s, studies have shown that more than 50 percent of pollution in waters throughout the United States was the result of storm water runoff. Storm water runoff is a major source of water pollution, declines in fisheries, restrictions on swimming and degradation of the waters of the state. In 1987 the federal Clean Water Act was amended to include the regulation of certain storm water classes.

General permits for storm water management require certain facilities to manage their practices in ways that are beneficial to the environment and to Missouri streams. The permits generally specify that storm water discharges cause no water quality violations. Site-specific permits may be for a business that stores toxic materials or large amounts of potential contaminants on site that are exposed to rainfall or that may need close monitoring.

Exemptions

Storm water discharges to combined sewer systems are exempt. In a combined sewer system storm water and wastewater drain to the same pipe and are treated. Consult the regulations for the full list of the exemptions written into the regulations.

Activities covered under the law fall into three broad categories: certain industries, land disturbance activities of five acres or more and municipalities of more than 100,000 in population. In addition, federal, state or municipal owned or operated facilities are subject to the law if activities on the site fall under a regulated category.

To determine if an industry is covered under the law, storm water regulations use the Standard Industrial Classification (SIC) code system devised by the U.S. Office of Management and Budget to cover economic activity.

The primary requirement of permits for storm water management is development and implementation of a Storm Water Pollution Prevention Plan. The plan must be developed within 180 days of and implemented within 360 days of permit issuance. The plan must be kept on-site and should not be sent to the Missouri Department of Natural Resources unless specifically requested. The permittee shall select, install, use, operate and maintain the best management practices on site to reduce the amount of sediment and other pollutants in the storm water associated with the land disturbance activities. The plan must be amended when changes in facility design, construction, operation or maintenance occur.

Land Disturbance

State law requires land disturbance activities of five acres or more to have a permit to discharge storm water. Four general permits have been written for land disturbance. Two of these general permits cover land disturbance in cities or counties that have approved erosion control plans in place. One covers land disturbance activities near sensitive waters, and one covers all other land disturbance activities.

Land Disturbances within Valuable Water Resources Areas

This permit covers land disturbance activities that impact at least five acres and activities near valuable water resources. A permit is required for land disturbance activities in areas within 1,000 feet of a lake used primarily for a public water supply, outstanding resource waters including cold-water trout streams. Land disturbance activities involving lakes participating in U.S. Environmental Protection Agency's (EPAs) "Clean Lakes Program," that are at or within 100 feet of major reservoirs or permanent streams, not including the Missouri and Mississippi rivers and sinkholes, losing streams or other direct conduits to groundwater require this permit.

Municipalities

Kansas City, Independence and Springfield were required to apply for storm water permits, under the federal law referred to as Phase 1 for storm water pollution-prevention measures. Adjustments are made if storm water is treated by means of a combined sewer system. Applicant information is submitted under Phases I and for Phase II to the department. The state is currently involved in determining implementation policies and drafting regulations to accomplish its responsibilities under Phase II of federal law. EPA rules require storm water permits on construction sites disturbing areas of one acre or more, as well as storm water permits on urbanized areas with populations of less than 100,000 in Phase II.

References

- Missouri Clean Water Law, Chapter 644 RSMo; Missouri Storm Water Regulations, Division 20, Chapter 6, Permits, 10 CSR 20-6.200, Storm Water Regulations.
- Management for Construction Activities: *Developing Pollution Prevention Plans and Best Management Practices*, September, 1992, EPA #832-R-92-005.
- *Protecting Water Quality: A Field Guide To Erosion, Sediment And Storm Water Best Management Practices For Development Sites In Missouri*, November 1995.
- *Developing Pollution Prevention Plans Storm Water Management for Industrial Activities*, *Developing Pollution Prevention Plans and Best Management Activities,* September, 1992, EPA #832-R-92-005.
- *Combined Sewer Overflow: Guidance for Funding Options*, August 1995, EPA #832-B-95-007.
- *Construction of Site Storm water Discharge Control: An Inventory of Current Practices*, June 26, 1991, EPA #833-R-91-100.
- *Municipal Wastewater Management Fact Sheets Storm Water Best Management Practices*, September 1996, EPA #832-F-96-001.
- Field Office Technical Guide (FOTG), Natural Resources Conservation Service (NRCS), contact the local NRCS office in your area.

Sources of Information

- Technical Bulletin, "The Storm Water Issues," Missouri Department of Natural Resources, Water Pollution Control Program, Permits Section, presents an overview of the storm water issues addressed by new regulations. (Actual regulations should be consulted when making decisions on specific situations).

- Technical Bulletin 12/98, "Storm Water Requirements for Land Disturbance Activities," Water Protection and Soil Conservation Division, Water Pollution Control Program.

- For statewide applicant forms and fee information, contact the Missouri Department of Natural Resources, Water Pollution Control Program, Permits Section, P.O. Box 176, Jefferson City, Missouri, 65102-0176, (573) 751-6825 or 1-800-361-4827.

- In the St. Louis region, contact Missouri Department of Natural Resources, St. Louis Regional Office, 9200 Watson Road, Suite 201, St. Louis, Missouri 63126-1528 (314) 301-7600.

- For more information, Missouri Environmental Assistance , P.O. Box 176, Jefferson City, Missouri, 65102, 1-800-361-4827 or (573) 526-6627, http://www.dnr.state.mo.us/deq/tap/hometap.htm.

404/401 Certifications

Any person planning to work in U.S. waters must first obtain a permit from the Corps of Engineers. Under Section 404 of the Clean Water Act, a permit is needed to excavate in or discharge dredged or fill material into a water of the United States, including wetlands.

The department has authority under Section 404 of the Clean Water Act and under the direction of EPA's Office of Wetlands Protection (OWP), to review proposed activities for those seeking federal permits, licenses, or variances that may adversely affect state waters (including wetlands) to respond to the federal public notice requests for comments. The department may deny or add conditions to these federal permits in order to protect water quality. Specifically, the state reviews permits issued by the U.S. Corp of Engineers under Section 404 of the Clean Water Act for dredge and fill activities requiring a federal license.

States have authority under Section 404 of the Clean Water Act to consider a range of chemical, physical and biological impacts while using narrative quality standards and anti-degradation policy to protect the integrity of wetlands and other state waters. Under "existing use requirements" and the state's obligation under anti-degradation, as indicated in the Clean Water Act, an intended use should not cause or contribute to significant degradation of the aquatic environment. Missouri includes wetlands in its definition of surface waters within its Water Quality Standards rules.

Any applicant for a federal license or permit who seeks to conduct an activity that may result in a discharge into navigable waters, including all wetlands, rivers and streams, must apply to the state for 401 Water Quality Certification. The applicant must obtain certification from the

department ensuring that the discharge is consistent with the federal Clean Water Act and the Missouri Water Quality Standards. Written conditions in a water quality certification become conditions of the federal permit or license. In making a decision on a request for 401 Water Quality Certification, the department must consider the effects of proposed discharges on ground and surface water quality, existing and designated uses of waters of the state, and direct and indirect impacts to water quality and aquatic life.

Wetlands

There are opportunities to protect the state's wetlands under the 401 Certification process.

The Certification process begins with application for Section 401 Water Quality Certification. The applicant should send a copy to the Missouri Department of Natural Resources of their application to the Corp of Engineers for a Section 404 permit. If the proposed project exceeds certain size criteria for impacts to wetlands and streams, then the Corps will place the project on public notice. During this period the Missouri Department of Natural Resources submits its comments on the project, considering the U.S. Fish and Wildlife Service and the Missouri Department of Conservation and their efforts to protect fish and wildlife and endangered species. The public may comment on the project during this time. The state reviews comments and considers them in its water quality certification process if the comments are related to water quality or aquatic life. The permit contains pollution prevention practices to protect water quality and aquatic life. After reviewing all comments, the state may issue certification with or without conditions, waive water quality certification or deny the project. The state reviews permits for alternative methods or projects that provide maximum water quality and aquatic life benefits. Projects that impact wetlands or streams of high natural-resource value with pristine water quality as well as diverse function may be denied. In addition, if the proposed project is under a certain size, the Corp of Engineers may issue a permit under its Nationwide Permit Program. In this case the Missouri Department of Natural Resources reviews the proposed nationwide permit after it is issued.

References

- Chapter 644, RSMo, Division 20, Chapter 7, 10 CSR 20-6.060 Water Quality Certification and 10 CSR 20-7.031 Water Quality Standards

- *Wetlands & 401 Certification,* Office of Wetlands Protection, National Guidance on Water Quality Standards for Wetlands, 1991, EPA #440-S-90-011, and U.S. Corps of Engineers, 33 CFR Parts 320-330, Regulatory Policies. U. S. Corps of Engineers, Channel Stability Assessment for Flood Control Projects, EM 1110-2-1418, Oct. 1994

- Water Quality Standards Handbook: Second Edition, August 1994, EPA # 823-B-94-005b, Appendix E, *Evaluating Numeric Water Quality Criteria for Wetlands,* (includes wetlands references)

- Missouri Department of Natural Resources, Geological Survey and Resource Assessment Division, *Missouri Wetlands: A Vanishing Resource,* Water Resources Report No. 39, P.O. Box 250, Rolla, Missouri, 65401 or call (573) 368-2100.

- http://www.nwk.usace.army.mil/conops/regulatory/permitap.htm for information on the 404 process.

Sources of Information

Contact the Water Pollution Control Program at (573) 751-1300 or 1-800-361-4827 for information on the following list or other water-related issue. Information is available from the regional offices (see appendix G) and on the department's Web site at http://www.dnr.state.mo.us/deq/wpcp.

- Animal wastes
- Compliance review
- Land application
- Nonpoint pollution sources
- State Operating Permits (NPDES)
- Storm water permits
- Wastewater plant permits
- Water Quality Standards
- Water pretreatment
- Wellhead protection

Enforcement/Compliance

The mission of the Missouri Department of Natural Resources, Water Protection and Soil Conservation Division, is to protect the environment, the public health and the economic well being of Missouri's citizens. It is the ultimate goal of the Water Pollution Control Program to bring all facilities into compliance. The policy of the department is one of Conference, Conciliation and Persuasion (CC&P), which is normally the first step in the resolution of a violation. If this process is not successful then formal enforcement is implemented and a Notice of Violation is issued.

Notice of Violations (NOVs) are issued without prior recourse to CC&P when the discharge or activity: 1) exceeds the applicable monthly average effluent limits, exceeds the applicable daily maximum effluent limits, 2) is below the applicable daily minimum effluent limits or 3) is outside the range for pH and exceeds the fecal Coliform count. NOVs are also issued without recourse to CC&P when the discharge: 1) violates the Water Quality Standards, 2) violates general criteria, 3) is not permitted, 4) interferes with the treatment processes or operation of the receiving treatment facility, its sludge handling and disposal processes, or 5) passes through the treatment facility in quantities or concentrations that cause pollution or violates any condition of the applicable effluent regulations.

Appeals do not usually result in a hearing because the appeal is often resolved by compliance with its terms or by an agreement between the party and the department, which is subsequently accepted by the Clean Water Commission. In addition to the administrative enforcement provisions of the law, the Water Pollution Control Program has utilized a variety of informal administrative actions to achieve compliance. Admissions letters are utilized where the party admits to paperwork violations and guarantees to correct the deficiency. If an NPDES permit is up for re-issuance, special conditions may be added to the permit, or the permit may be issued for a shorter time period along with mandatory compliance or the permit is not re-issued.

Appeals are commonly resolved through stipulated agreements that are accepted by the Clean Water Commission before becoming effective. For reasons of promptness, the commission has largely delegated the responsibility to conduct hearings to hearing officers. The hearing officers provide the commission with the transcripts and proposed Findings of Fact, Conclusions of Law and an Order upon which the commission may act. There is no formal opportunity for public comment once an appeal comes before a hearing officer but the public may attend the hearing. Civil matters regarding the Missouri Clean Water Law remain the chief responsibility of the Attorney General's office and are referred there when other efforts have not been effective.

Compliance Data Management

The Water Quality Information System (WQIS) contains information regarding water quality and regulated facility compliance needs. The information is arranged to provide basic facility information, including permit limits, conditions and compliance schedules, effluent data, inspection data, enforcement schedules and compliance schedules generated though enforcement activities.

It is the goal of the department to associate latitude and longitude information with all of its major data sets by the year 2001. The need for accurate locations and data for regulated facilities is essential to environmental planning, enforcement and other cross-media applications. Existing locational data generated through various means, including geocoding, global positioning system (GPS), map interpolation, etc., is available for permits issued through the Water Pollution Control Program. Handheld GPS units have been supplied to the regional offices for use during inspections to determine locational information. This data is included with inspection reports and entered into the Water Quality Information System for each permitted facility. The system is used now and will be used in all future geographic information systems (GIS) applications.

Compliance Reports

The Water Quality Information System produces four regular types of compliance reports. These reports are case status reports prepared on the same frequency as the Clean Water Commission Meetings. The reports provide the status of cases handled by the Missouri Attorney General's Office, the status of abatement orders, the status of abatement order appeals and Clean Water Commission orders and the status of administrative actions, such as those actions taken in response to fish kills.

All compliance data is periodically transferred to the Division Enforcement Tracking System to enable Water Protection and Soil Conservation Division staff to monitor compliance activities.

The department's Environmental Assistance Office works with facilities to achieve voluntary compliance. Regional offices will refer facilities to the program when technical assistance may be successful in returning a facility to compliance.

Generally, the regional office staff provides technical assistance within the Water Pollution Control Program. In cases where there is a need for other than routine technical assistance, regional office staff may seek the assistance of the Technical Assistance Program. Whenever the

regional offices request enforcement assistance from the Water Pollution Control Program, all technical assistance is coordinated after consultation with the enforcement section.

Conference, Conciliation and Persuasion is focused and time limited and does not usually exceed 90 days. Return to compliance or enforcement does not usually exceed 180 days unless a compliance schedule is agreed too by the facility owner for a longer period of time. This could include modifications that permit revised schedules of compliance or special conditions. The Production Action Tracking System (PATS) includes the tracking of Conference, Conciliation and Persuasion (CC&P) activities.

The statewide goals for compliance are evaluated and refined as part of the annual strategic planning process.

The Missouri Clean Water Act provides for the granting of variances from applicable Water Quality Standards, effluent limits, pretreatment conditions and for other regulations unless prohibited by the Federal Water Pollution Control Act. Conditions under which variances may be granted are found in Section 644.061 RSMo (Missouri Revised Statutes) of the Clean Water Law.

Please see the Appendix B for the Enforcement and Compliance Process chart.

References

- Missouri Clean Water Law, Chapter 644 RSMo, Section 644.026, Powers and Duties of the Commission - rules and procedures
- Section 644.076, RSMO, Unlawful acts prohibited – false statements and negligent acts prohibited – penalty exceptions,
- Section 644.096, States or its subdivisions may recover actual damages from violators, etc.
- Missouri Department of Natural Resources rules, Division 20, Chapter 3, 10 CSR 200-3.010 -Penalty Assessment Protocol.